

Notice of Allowability

Application No.

10/748,557

Examiner

Tuan T. Nguyen

Applicant(s)

KOO, KIE-BONG

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to ____.
2. ☒ The allowed claim(s) is/are 1-23.
3. ☐ The drawings filed on ____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☒ Other Search History.



DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. Figure 2 should be designated by a legend such as --**Prior Art**-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

EXAMINER'S AMENDMENT

3. The following changes to the drawings have been changed by the examiner. In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.

Label figure 2 as – **(PRIOR ART)** –

Allowable Subject Matter

4. Claims 1-23 are allowed.
5. The following is an examiner's statement of reasons for allowance:

The prior art of record fail to disclose a data output driver for a combination type of a SDRAM device operated in both of a single data rate (SDR) mode and a double data rate (DDR) mode, in combination with other cited limitations, comprising at least one switching unit formed on each of the first input/output line and the second and input/output line; at least one resistor parallel-connected with the switch and formed on each the first input/output line and the second input/output line, wherein the switching unit is turned on or turned off by selecting one of SDR mode and a DDR mode as recited in claim 1.

Claims 2-6 are therefore allowed because of their dependency on claim 1.

The prior art of record further fail to disclose a data strobe output driver of a combination type of a synchronous dynamic random access (SDRAM) device operated both single data rate (SDR) mode and double data rate (DDR) mode, in combination with other cited limitations, comprising a first switch formed on each of the first input/output line and the second input/output line; resistor parallel-connected with the first switch and formed on each of the first input/output line the second input/output line; a second switch formed on the first input/output line and the second input/output line between data strobe output pad and an output terminal of the first switch; and a third switch formed between an output of second the third switch and a ground voltage, wherein the first switches are turned on or turned off by selecting one of the SDR mode and the DDR mode as recited in claims 7.

Claims 8-14 are therefore allowed because of their dependency on claim 7.

The prior art of record also fail to disclose a SDRAM of combination type applying a single data rate (SDR) mode and a double data rate (DDR) mode having data output driver, data strobe output driver and a data mask driver, each the data output driver, the data driver and the

Art Unit: 2824

data mask driver, in combination with other cited limitations, comprising a first switching unit connected with each of the first input/output line and the second input/output line at the drains of the pull-up transistor and the pull-down transistor; a first resistor parallel-connected with first switch formed on each of the first input/output line and the second input/output line; a second switch formed on each of the first input/output line and the second input/output line adjacent to the input/output pad; a second resistor parallel-connected with the second switch and formed on each of the first input/output line and the second input/output line; and a third switch formed on each of the first input/output line and the second input/output line allocated between the first switch and second switch, wherein the first to the third switches are turned on or off by selecting one of the SDR mode and the DDR mode as recited in claim 15.

Claims 16-23 are therefore allowed because of their dependency on claim 15.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Lee (US 2004/0100837) discloses an on-die termination circuit and method for reducing on-chip DC current and memory system including memory device.
- b. Maruyama et al. (US 6,426,900) disclose synchronous semiconductor memory device performing data output in synchroniztion with external clock.

Art Unit: 2824

- c. Ooishi (US 6,424,585) discloses a semiconductor memory device with a voltage down converter stably generating an internal down-converted voltage.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Nguyen whose telephone number is (571) 272-1880. The examiner can normally be reached on Monday - Friday, 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan T. Nguyen
Primary Examiner
Art Unit 2824

July 25, 2005